

Center for Infectious Diseases Research	
Laboratory Standard Operating Procedure	
Bio-Plex 200 Luminex System for Bead-based assays (Bio-Rad)	
Lab SOP No.:	Version No.:
Date prepared: 24/5/2013	Date approved:

I. Introduction

- A. The Bio-Plex 200 is an automated suspension array system uses the Luminex beads technology where beads are coupled with appropriate antibody or nucleotide probe for detection of specific antigen in a solution or DNA of an organism in clinical sample.
- B. Utilizing Multi Analyte Profiling technology (xMAP), Bio-Plex system allows simultaneous analysis of multiple analytes in 96 wells plate. Commercially available kits can be used such as Bio-Plex™ Human Cytokines, Chemokines and Growth Factors Assays (Bio-Rad), grouped in single-plex or in multiplexed; 8, 17, 21 and 27-plex assays for most common modulators of the acute phase. ResPlex Kits (by Qiagen) contain assays for DNA/RNA detection of 21 respiratory pathogens in two multiplex assays.

II. Principle

Luminex technology incorporates flow cytometric methods using custom-designed microbeads that are colored with slightly different shades of the red spectrum (100 shades) [xMAP technology. Luminex Corp.; 2008. <http://www.luminexcorp.com/technology/>.].

Beads can be labeled either with nucleic acids probes (for DNA detection), or with antibodies (for proteins detection). Each colored bead is labeled with a different fluorescently labeled probe that is specific to each particular target, or with a different antibody specific to each antigen. There are two types of beads, polystyrene and magnetic beads, with minor difference between two groups of beads.

III. Specimen

- A. Human serum: 50 µl of serum is recommended for cytokines analysis. Handle specimens in closed tubes to avoid contamination and evaporation. Follow universal precautions when performing phlebotomy or handling patient specimen, calibrators, or other serum-based products.
- B. DNA/RNA extracts: 50 µl of DNA/RNA extracts is recommended for microbial detection. Eluats concentration should be optimized up to method of extraction used. If extraction is proceeded in the lab. Core, SOPs for DNA/RNA extraction should be respected.

IV. Responsibility and Accountability

Dr. Khaldoun Masoud is supervising and performing the Bio-Plex assays. He is adequately trained in safe BSL2 laboratory techniques. It is the responsibility of Dr. Masoud to use Luminex

diagnostic kits in accordance with the principles of good laboratory practice. Each kit is provided with specific 'Instructions for Use' pamphlets which the laboratory worker should read carefully prior to performing the assay. It remains the responsibility Dr. Masoud to ensure that any biological and chemical wastes so generated be disposed of appropriately according to department safety guidelines. Dr. Masoud should report accidents if any to the department Safety Officer and biological/chemical safety committee member. For external users, a reservation

V. Personal Protective Equipment

Wear protective clothing such as laboratory coat, safety goggles, face shield and disposable gloves where appropriate.

VI. Accessibility

Approval of the lab director should be reclaimed via on-line reservation page on AUB website, Facility Reservation, Faculty of Medicine, CIDR. For further assistance refer to our lab. Manager; Ext. 4880.